

Names _____

Shipping Spheres

Spherical items such as basketballs, baseballs, and volleyballs are often packaged in boxes where one ball just fits inside the box. Draw a picture of a sphere inside a box.

a) A baseball has a 3 inch in diameter and is placed inside a box. What is the ratio of the volume of the ball to the volume of the box?

b) Repeat question (a) with a 9.5 inch diameter basketball.

c) Repeat question (a) with a 8.25 inch diameter volleyball.

d) What (if any) conclusions can be drawn from parts (a) – (c)?

e) Prove your conclusion in part (d) by repeating question (a) using a ball with radius r .

2. Draw a picture of a sphere inside a cylinder so that the sphere has the same diameter as the cylinder and so that the sphere touches the top and bottom of the cylinder.

Let's package the baseball, basketball, and volleyball in a cylindrical package as draw above. Explore the ratio of the volume of the balls to the volume of the cylinder. Support your findings. Prove any generalizations.

3. Tennis balls and golf balls are packaged three per box. Tennis balls have a radius of 2.7 inches and golf balls have a radius of 1.68 inches. Explore the ratio of the volume of the balls to the volume of the packaging. Support your conclusions.